

**Remarks by the Honorable Frederick Gregory
NASA Deputy Administrator
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Thank you Don (Don Peterson, Executive Director Air Force Association) for that very generous introduction and good afternoon everyone.

I'm delighted you asked me to participate on this panel, and look forward to some excellent discussion with General Lord (Gen. Lance Lord, Commander, Air Force Space Command) and Lt. General Hamel (Lt. Gen. Michael Hamel, Commander, Space and Missile Systems Center) and our audience members about the importance of American leadership in space activities, both on the civil and military side.

But first, I would like to comment on two other subjects in a descending order of importance.

Two weeks ago we witnessed the worst natural disaster in American history. Both the Air Force and NASA family was not immune from the devastating affects of Hurricane Katrina, with many of our people being caught in the storm's wake.

I commend the Air Force Association for your efforts to encourage members to contribute to the Air Force Aid Society in addition to other charities dealing with the tremendous humanitarian challenge we face.

At NASA, we have something called the NASA Family Assistance Fund, which is providing NASA Gulf Coast employees and their families with grant and loan assistance to help supplement other emergency funding assistance. Anyone in this audience who is so inclined can learn more about the NASA Family Assistance Fund at www.feea.org.

Both our Stennis Space Center in Mississippi and Michoud Shuttle External Tank Assembly Facility in New Orleans were hit hard by Katrina and the flooding that ensued.

In the immediate aftermath of the storm, we've been working hard to make sure that all our NASA and contractor employees are contacted and found safe, and we continue to be engaged in this effort.

As NASA Administrator Mike Griffin has pointed out, a number of our employees demonstrated incredible bravery and commitment in risking their lives to protect other lives, including hundreds of people who sought shelter at Stennis during the storm, as well as the facilities and flight hardware that were entrusted to them.

Turning to the important work of recovery that lies ahead, NASA is committed to maintaining our proud tradition of utilizing the Stennis Space Center and Michoud Assembly Facility to produce the space hardware and research applications products that contribute so greatly to our nation's space activities.

The outstanding people of Stennis and Michoud have stood by NASA in good times and bad, and NASA's leadership is determined to honor their commitment. You can count on it.

Now prior to discussing NASA's Vision for Space Exploration, I hope you will permit me to add a personal note. Since I made my announcement last week that I would leave the space agency after 31 wonderful years as a test pilot, astronaut and member of NASA's leadership, I've received many good wishes from friends throughout the space and Air Force community.

I want to express from the bottom of my heart how much those good wishes mean to me.

In my career I've worked for two organizations that are simply the best. And I can't say enough about the experiences I've had and the wonderful people I've met along the way. The United States Air Force is the world's premier

Throughout my career as a helicopter and fixed wing pilot, I've flown in some pretty rough weather.

I've learned to respect nature's fury and the task many of you have ahead in helping to rebuild the damaged offshore oil rigs, and the refineries and large structures hit in coastal Alabama, Mississippi and Louisiana.

are still actively trying to locate

At this point we've contacted , the good news is that

Clearing up roads to Michoud...water still an issue...all civil servants michoud /nasa contractors stennis.... About 300 people still track down.

provide all eligible employees with grant and loan assistance to help supplement other emergency funding assistance. With respect to the Family Assistance Fund, I am gratified to report that your fellow NASA employees have provided almost \$45,000 in new donations to the fund since the hurricane struck the Gulf Coast. those of us who've been privileged to be a part of the Air Force Team to send donations to the Air Force Aid Societyour continuing efforts to ensure American leadership in civil as well as military aspects of space.

I'm delighted to be here in Omaha, a place steeped in our country's history of exploration and discovery, to discuss NASA and our new Vision for Space Exploration.

Most fittingly for those of you who live in this beautiful state, the passion of the American people for exploration and discovery stems in large measure from what happened two centuries ago in the vast American wilderness.

Those who have studied our heritage of exploration will recall that exactly 200 years ago in early August, the Lewis and Clark Expedition held the first official council between representatives of the United States and western Indians just north of Omaha.

In this historic meeting, the members of the Corps of Discovery met with a delegation of Oto and Missouri Indians. The two groups traded gifts, and showed off their various technologies, including the

magnets, compasses and telescopes that accompanied Lewis and Clark's exploration party.

Now as their exploration journey continued, the stories that Meriwether Lewis and William Clark and their Corps of Discovery brought back from their two year journey—of endless buffalo herds, of great short and tall grass prairies, huge mountain ranges and of a flourishing civilization of Native American tribes—opened the minds of our young Nation's citizens to an age of new possibilities.

Today America's exploration reach extends from the deepest depths of the Earth's oceans to ancient seabeds on the surface of Mars.

Fittingly, just as Nebraska was the setting for that first great American voyage of exploration two centuries ago, I have no doubt that many of you will help to lead our way into the far reaches of the space frontier.

Based on NASA's productive partnerships with the University of Nebraska at Omaha through the NASA Space Grant and Experimental Program to Stimulate Competitive Research, or EPSCoR, we know your graduates are well prepared to become the leaders in our nation's technological future.

This morning I had the great privilege of learning more from your faculty and staff about the impressive activities being conducted through these programs. NASA is quite proud of your initiative in bringing cutting-edge research into the heartland, with projects such as NativeView Connections which is training Native American communities in the use of geospatial technologies, your work to enhance remote sensing of cropland agriculture, and your project to offer safe, cost-effective, accessible air transport services to small communities and isolated areas throughout the Great Plains.

NASA, of course, is proud to assist these efforts. In this fiscal year, we have obligated over one and a half million dollars for research activities and Space Grant scholarships in Nebraska.

And just as you plant seed corn in the hope of obtaining a bountiful harvest somewhere down the line, we expect that our investment in the bright young minds found in the Cornhusker State will help produce the scientists, engineers and astronauts who will enable us to carry the torch of exploration to heights unimagined and into frontiers unknown in the decades ahead.

There is one thing about working at NASA I can guarantee you. As we constantly strive to push the technology envelope, and expand humanity's exploration reach, we certainly go to some interesting places.

At this very moment 250 miles above us, our new Expedition 10 crew members onboard the

football field sized International Space Station, astronaut commander Leroy Chiao and cosmonaut Salizhan Sharipov, are just beginning a six-month mission devoted in part to micro-gravity research that will help pave the way for future missions beyond low earth orbit.

I returned last week from Kazakhstan, where I had the privilege of wishing Leroy and Salizhan a successful flight prior to their launch from the Baikanour Cosmodrome. I might add that if you enjoy arid, desolate places in the western United States, then the steppes of Kazakhstan would be a great place to visit. Especially if you know how to ride on camels, as these hardy beasts provide the preferred mode of transportation for many locals.

Back to the Space Station, during their six month mission, our two intrepid space explorers will spend their time on spacewalks to continue outfitting the Zvezda Service Module, help prepare the facility for

the Space Shuttle's return to flight and conduct experiments in such disciplines as medicine, human life sciences, biotechnology, and Earth observation.

On Election Day, when Leroy will be casting his vote via a secure email to election officials in Texas, the Space Station will mark four consecutive years of human occupancy.

To help advance our new exploration objectives, of extending the reach of human civilization throughout the solar system, Leroy and Salizhan will also be learning a great deal about the physical and psychological challenges of living and working in space.

We fervently hope this research will also help people here on Earth. We know that in the six months that our Expedition crews typically spend onboard the Space Station our crew members typically lose about 30 percent of their muscle mass and about 10 percent of their bone mass in this zero-

gravity environment. Fortunately, they recover this mass when they return to Earth. But with the future needs of long-duration space flight in mind, we are working hard to learn how we might arrest this pattern.

Now think about what a solution to this condition might mean to the millions of people--our parents and grandparents-- who lose bone mass as a result of the natural aging process, and suffer through the pains associated with osteoporosis. That is one of the reasons why we conduct our ambitious research and exploration activities in space.

Incidentally, if you've never done so, I strongly encourage you to go outside before dawn or after sunset to see the International Space Station passing overhead. It's a stunning sight. The Space Station looks like a very bright star as it makes a stately arc across the sky.

Indeed, you can see the Space Station from Omaha tomorrow morning at 5:21 a.m. for two minutes as it travels about 13 degrees above the northern horizon toward the northeast.

You can go to our web site at www.jsc.nasa.gov to get detailed timelines that will help you scope out future Space Station flybys.

Of course our exploration reach also extends to the surface of Mars, where NASA's twin energizer robots, Spirit and Opportunity, continue to build on their already impressive scientific return.

To say the least, these little rovers that could have vastly exceeded our wildest expectations.

Opportunity, which is exploring an area called Meridiani Planum around the Challenger Memorial Station has really hit the scientific jackpot. It has discovered clear evidence that the landing site was once on the shoreline of a salty sea. This evidence

suggests that Mars was a different place not that long ago.

For all the productive work these robots have performed on the Martian surface since January, and will continue to perform as we extend their missions hopefully several more months, a human explorer would be able to collect the same amount of material as Spirit and Opportunity have collected in a single day.

Further, using his or her cognitive skills, our Mars explorer would be able to quickly spot those areas of the surface that are most promising for investigation and inquiry, such as the El Capitan outcropping where Opportunity was able to find evidence of ancient water on Mars' surface.

But, at present, humans can't get there.

Until we conquer the human endurance challenges I mentioned, and develop improved

propulsion and power generation options, our only bet is to continue these robotic precursor missions.

By doing so, we are developing the "advance guard" for human exploration.

Mars is not the only place in the solar system that is drawing NASA's attention these days. Our ambitious Cassini-Huygens mission has been safely in orbit around Saturn for several months and its four-year exploration of the planet, its rings, moons and magnetosphere is well underway.

We look forward to next January 14 when the Huygens probe will descend into the liquid atmosphere of Saturn's mysterious moon Titan, a moon whose atmosphere may hold the secrets to Earth's early atmosphere from which life itself sprung forth billions of years ago. You are going to see some fantastic science results when this event happens.

Incidentally, the 14th day of January has some importance to us in the NASA family. For it was on January 14th earlier this year that President George W. Bush came to NASA headquarters to announce a new vision for space exploration.

And as the above examples demonstrate, NASA is already hard at work advancing our long-term exploration objectives that will take us back to the Moon, and then onward to Mars and beyond.

We are tremendously excited that the President has given us a new set of compelling, achievable and responsible goals for the space program.

I'd now like to show you now a brief video that highlights the space exploration vision and what NASA will do to implement it.

Let me now make a few points about where we go from here. First, I'm confident that we will move forward with the support and interest of the American people. This summer, a Gallup Poll found that seven

out of ten adult Americans support the objectives of the Vision. Also, from my trips around the country, I can tell you that people's level of excitement about our space activities has never been higher. A measure of this interest is the NASA web site, which has received nearly 16 billion hits this year. That's right--16 billion. This is over five times the number of hits the web site received all of last year.

This public support has been heard by our legislators in Congress. Last month the Senate Appropriations Committee approved \$16.4 billion for NASA in the next fiscal year, including funding for the Crew Exploration Vehicle and design of a robotic lunar exploration mission.

After the election, the final appropriations levels will be determined, and we are very optimistic about where we will stand at the end.

To be certain, we are currently making tangible progress in pursuit of the Vision's goals in outer space.

As mentioned, next Tuesday we will mark the fourth year of continuous human occupancy onboard the International Space Station. Every day that our Expedition crewmembers spend on this remarkable research facility we gain new knowledge that will help us send crews beyond low Earth orbit for months at a time with increased confidence.

Of course another important milestone in the Vision will occur when we safely return the Space Shuttle to flight and continue construction of the International Space Station.

Thanks to the diligence of the entire NASA-industry team, we've made good progress in this regard. We've completed five of the Columbia Accident Investigation Board's 15 shuttle safety recommendations. We're making good progress on

the other 10 items and expect to close them out by the end of the year.

We are on track for launch of the STS-114 mission to the Space Station sometime next spring, but the final determination of "when" will hinge on our confidence that we are fit to fly.

Significant progress is also being registered in the activities of our new Exploration Systems Mission Directorate, which was created in an effort to transform NASA organizationally so that we are a much friendlier place for entrepreneurs, inventors and creative thinkers who want to be involved in our unfolding exploration journeys.

Under the able leadership of Admiral Craig Steidle, the Exploration Systems Mission Directorate is working on the second goal of the Vision for Space Exploration, to develop and test under Project Constellation, a new spacecraft, the Crew Exploration Vehicle, with a demonstration scheduled

in 2008, and the first crewed mission no later than 2014.

Last month, NASA awarded study contracts for the Crew Exploration Vehicle and for Lunar exploration concepts and approaches to 11 groups, drawn from 60 proposals, representing a broad cross section of traditional and nontraditional aerospace firms, of small businesses, academic institutions and commercial enterprises. We've also received 3,700 responses to a request from industry and academia for innovative ideas about human and robotic exploration technology. So we are moving forward with great speed.

We can also report progress on Project Prometheus, NASA's bold attempt to use nuclear power and propulsion to enhance our deep space exploration capabilities. We have awarded a design contract on the non-nuclear component of an ambitious mission to the icy moons of the Jupiter

slated for the next decade. And in August, NASA signed an agreement with the Department of Energy's Naval Reactors for development of reactor systems for Project Prometheus.

Indeed, throughout the agency and with partner nations and organizations, work is already under way to advance and mature a range of novel concepts and high-leverage technologies that will enable safe, affordable, effective and sustainable human and robotic exploration for the benefit of our people and all humankind.

In turn we are quite confident that our exploration activities will spur technological developments that will lead to new products and services and tangibly improve the lives of people throughout the world.

Just as the Apollo program led to important advances in computing and electronics, the potential

spinoff benefits from this broad based exploration program could be considerable.

Since that time, cataract detection, heart pumps, microchips and safer aircraft are all examples of NASA technologies used to advance our exploration goals being applied to productive use in society.

We believe the technology development necessary to execute and implement the president's vision will accelerate advances in robotics, autonomous and fault tolerant systems like the Hubble servicing mission approach, human-machine interface, materials, life support systems and novel applications of nanotechnology as well as microdevices.

And if history is any guide, the technologies we develop will provide new business applications in numerous unanticipated ways.

Now to help spur these new technologies we are doing something quite refreshing in our industry

outreach efforts. Through our new Centennial Challenges program, we are establishing a competition to stimulate private sector innovation in new space and aeronautics technologies, assuming the Congress agrees.

I'd now like to turn to what the pursuit of the Vision will mean for the nurturing of a new generation of skilled scientists and engineers here in Nebraska and around the country, and the resulting development of new technologies that will promote economic growth over the long run.

We believe the exciting potential of our space exploration initiative will help reverse a decade long trend of declining interest by students in math, science and engineering fields, and help refresh NASA's talent pool and our national technology base overall.

From NASA's self-interested perspective, we are facing the graying of our workforce. One-fourth of

our workforce will be eligible for retirement in the next five years.

And while employment opportunities in science and engineering are expected to increase at a rate almost four times greater than for all other occupations throughout this decade, enrollment in science and engineering college courses has been in decline.

But this has broader national implications as well, implications that should particularly interest this audience.

A new report by the National Science Board says the nation is losing "a long-distance race" to maintain its edge in human scientific resources.

The Board pointed out that the U.S. ranks 17th among nations surveyed in the share of 18 to 24 year-olds who earn natural science and engineering degrees, trailing Taiwan, South Korea, Italy and Ireland.

A regeneration of our nation's commitment to exploration and discovery will help reverse this trend.

So as we move forward with initial activities to implement the Vision, we're also putting a lot of effort in reaching out to our next generation of explorers.

We're quite excited, for example, about a new NASA-sponsored program called Explorer Schools. This program is joining educators, administrators, students, and families from 100 middle schools across the country in sustained involvement with NASA's research, discoveries and missions.

Among our trailblazing Explorer Schools is the Pender Public School. At Explorer Schools like these we use our ambitious mission activities to help educators bring excitement and wonder to their science and math classroom lessons, as only NASA can.

I should also mention that thanks to new legislation the President signed earlier this year, NASA is beginning a new Scholarship for Service Program, which will provide financial assistance to promising undergraduate and graduate students and an opportunity to work for NASA. So I challenge the students here today to consider NASA in your career plans. We will give you challenges that will help you stretch your abilities and realize your dreams.

I'm convinced in the ways we are attacking the challenges presented by the Vision for Space Exploration, we are setting the stage for a space program that will boost the opportunities we will have to become a smarter, safer, healthier and more intelligent world.

And if we do it right, on a scale never seen before in the history of the planet, at a pace hardly thought possible.

We are just at the beginning of this journey, and we are facing the future with a combination of wonder and humility as we strive to open a frontier as vast and promising as the one that Lewis and Clark entered not to far from here two centuries ago.

Once again I thank you for the opportunity to be here today in the American heartland and for your tremendous hospitality. Thank you very much.